

NSSP UPDATE



SUBSCRIBE NOW

In August 2019 Issue:

People

- [Community of Practice](#)
 - Workgroup and Committee Updates
 - NSSP Community of Practice Call
 - Implementation Guide for Syndromic Surveillance
- [CDC Funding Recipients and Partnerships](#)
 - DoD–VDH Data-sharing Pilot
 - Maricopa Co., Arizona, Uses SyS to Help Tribal Communities
- [ESSENCE Queries](#)

Practice

- [Collaborations Accelerate SyS Practice](#)
- [Heatmaps for Visualizing Time-series Data](#)
- [Free-text Coding in NSSP–ESSENCE](#)
- [Data Quality Corner](#)

Program

- [Technical Updates](#)
 - [Current Month and Upcoming Events](#)
 - [Last Month's Technical Assistance](#)
 - [NSSP Participation](#) **NEW STATS**
- Archived [NSSP Update PDFs](#)

People

Community of Practice

Workgroup and Committee Updates

Technical Committee (TC): The TC assembled a small group of volunteers to review and comment on proposed feature enhancements in ESSENCE. This group reviewed some new filters in the ESSENCE Query Portal that would allow users to limit their query results based on Chief Complaint or Discharge Diagnosis availability. The next TC meeting is slated for October 3 at 2:00 PM ET. The leadership group is reviewing and prioritizing enhancement requests to determine the agenda for the next meeting. They will also review responses from the ESSENCE Chief Complaint Processing, Binning, and Business Logic Changes survey to determine recommendations for ESSENCE changes and next steps. Additionally, **Caleb Wiedeman has agreed to serve with Natasha Close as co-chair of this committee.**

Monthly NSSP CoP Call

Please join your colleagues for the monthly NSSP Community of Practice (NSSP CoP) call. The next call will be held **August 27, 2019, 3:00–4:30 PM ET**. This month's topic is **PEP this...Syndromic Surveillance and Rabies PEP Administration**.

New member? Syndrome? Success? Email NSSP!

Be part of the NSSP Community of Practice (CoP). To participate, please email nssp@cdc.gov and give your name, contact information, and request to be part of the NSSP CoP. If you want to join a committee or workgroup, we will forward your email to that group's chair and co-chair.

If you have a syndrome to share, success story to showcase, or resources to post on the Knowledge Repository, email nssp@cdc.gov. We will forward your request to the appropriate N SSP CoP committee or workgroup to review before posting.

Implementation Guide for Syndromic Surveillance

Final edits of the *Implementation Guide for Syndromic Surveillance Release 1.0* were completed in June 2019 ahead of schedule, thanks to participation of Community of Practice members. Last month, the guide was posted on the HL7 website, and the National Institute of Standards and Technology Implementation Authoring Tool ([NIST IGAMT](#)) released the message validation tool for testing. NIST IGAMT is open access, and anyone can enter the site as a guest user and validate messages for this specification.

The ISDS and CDC Workgroup completed its revision of the *Implementation Guide*. The HL7 Public Health Workgroup approved the guide, launching a 90-day period for review so that all HL7 members have sufficient time to comment. The *Implementation Guide* will be posted as a WIKI page for collaborative editing. If you aren't an HL7 member, you can make suggestions by submitting a ticket to the N SSP [Service Desk](#) (an account is required). N SSP has set up an *Implementation Guide* queue to triage comments. The WIKI is located at http://www.hl7.org/implement/standards/product_brief.cfm?product_id=503 and will be available to the general public for download on October 26, 2019. **The 90-day comment period closes November 1, 2019.**

HL7 2.5.1 Implementation Guide Milestones*	
Time Frame	Activity
2015	Completed Version 2.0 Final RELEASE**
2016	Released Erratum and Clarification Documents for Version 2.0
2017 Summer	Released Version 2.2 Working Draft for Community Comment and Consensus
2017 Winter	Released Version 2.3 for Review and Community Comment
2018 March	Released Version .09
2018 Spring	Submitted DRAFT HL7 Guide for Balloting: Implementation Guide for Syndromic Surveillance Release 1.0 Standard for Trial Use (STU) HL7 Version 2.5.1
2018 Fall (October– December)	<ul style="list-style-type: none"> ■ Submitted to HL7 for Review in November 2018 ■ Integrated and Began Resolution of 221 HL7 and Public-provided Comments ■ Resolved and Closed 135 Comments from Fall Ballot (approved by HL7 December 2018)
2018 November– 2019 March	<ul style="list-style-type: none"> ■ Reconciled Comments and Obtained Final Approval from HL7 Public Health Workgroup ■ Two-week Reposting of Dispositions (Final Voting)
2019 January	Provided Final Resolution for 33 Comments (Pending)
2019 February	<ul style="list-style-type: none"> ■ Further Integrated Approved Changes ■ Provided Final Resolution for 30 Comments (Anticipated)

HL7 2.5.1 Implementation Guide Milestones*

2019 March–May	<ul style="list-style-type: none"> ■ Further Integrated Approved Changes ■ Continued to Provide Final Resolution for Comments ■ Continued to Provide HL7 International with Block Group Review (4 remaining) ■ Imported Manual Changes into IGAMT (NIST) ■ Exported Final Manual for Review and Edit (ISDS Message Mapping Guide Workgroup and CDC Internal Review) ■ Resubmitted Updated <i>Implementation Guide</i> for Final HL7 Ballot Voting (including 2-week review by ballot participants) ■ Began Next Round of HL7 Block Review (23 items out of 320 outstanding) ■ Conducted Another IGAMT Export ■ Established Submission Date for HL7 Public Health Workgroup
2019 June 20–27	Hand-off to HL7 Public Health Workgroup for 2-week Review
2019 July	<ul style="list-style-type: none"> ■ Resolve Comments from HL7 Public Health Workgroup Review ■ Hand-off to HL7 Technical Steering Committee for Approval ■ Begin Work with HL7 Editor to Format Distribution-ready Version of <i>Implementation Guide</i> (in accord with HL7 guidelines) ■ Begin 90-member HL7 Review (released on HL7 member-only WIKI July 28, 2019)
2019 Summer (June–August)	<ul style="list-style-type: none"> ■ Submit Request to HL7 for Publication as a Standard for Trial Use ■ NSSP will Work with NSSP Community of Practice on Strategy to Pilot Test <i>Implementation Guide</i> ■ Begin Recruitment Process for Pilot Participation in Hospitals and Public Health Departments and across Electronic Health Record (HER) Vendors ■ Confirm Pilot Site Participation ■ Develop Strategy for Testing NSSP Receipt of Data Using New Public Health Authority Standard
October 26, 2019	Release to Public: <i>HL7 2.5.1 Implementation Guide for Syndromic Surveillance Version 1</i> as a Standard for Trial Use for the General Public
2019 November	<ul style="list-style-type: none"> ■ Initiate Pilot Tests of <i>Implementation Guide</i> ■ [NSSP COP] Identify Testers (non-pilot sites) to Evaluate and Provide Feedback on Published Guide
2019 September– 2022 September	Publish Standard for Trial Use for Period of 1 to 3 years (during which time additional comments may be submitted and dispositioned and additional releases of the guide published)

* Milestones revised July 31, 2019.

** Version 2.0 is currently being used; subsequent versions are working drafts only.

Shaded activities have been completed.

Fall 2019 Pilot Testing of *Implementation Guide*

Let's kick the tires and take the *Implementation Guide* for a spin. In the next few months, NSSP will lead pilot tests for EHR vendors, hospitals, and health departments. About 30 variables were revised or created, and the pilot will assess whether business processes across these organizations can support the new guidance with reasonable effort.

This document will guide the community's efforts for years to come. If you would like to volunteer, we're beginning the planning process and scoping out the evaluative measures for the pilots. We anticipate the pilots to begin in the fall. We could use your help making sure messages are complete, processed seamlessly, and received intact. More details will be shared soon. If interested, please email nssp@cdc.gov.



CDC Funding Recipients and Partnerships

DoD–VDH Data-sharing Pilot

The Department of Defense (DoD) and the Virginia Department of Health (VDH) maintain local ESSENCE systems to monitor the health status of their military and civilian populations, respectively. In June 2018, DoD and VDH collaborated on a [pilot project](#) to develop processes for data sharing, data access, and communication. Their goal was to develop best practices that states could use to share syndromic surveillance data with DoD using ESSENCE through CDC's National Syndromic Surveillance Program (NSSP).



For the first time, DoD and civilian syndromic surveillance data were visible within the same system, at the same time. Epidemiologists at VDH observed DoD operations and could see *potential* reportable-condition cases that might not be reported to local public health authorities. DoD participants observed disease trends outside an installation, gaining information that could better prepare military health personnel to respond to outbreaks and emerging infectious disease.

Overall, the pilot strengthened their working relationship and provided the opportunity for collaborative public health surveillance and response. In one instance, for example, a DoD public health practitioner alerted colleagues at the local health department of an outbreak of influenza-like illness at an elementary school on the military installation. Through data sharing, DoD and VDH visualized the event and monitored it in the context of other illnesses affecting the local community. VDH and DoD supported the school by monitoring influenza-like illness in the surrounding county and by recommending control measures.

DoD and VDH continue to share post-pilot data and have regular discussions about NSSP data. Once DoD transitions to the next version of ESSENCE, DoD health practitioners plan to expand data sharing to other states. The ability to view DoD and civilian health encounter data in the same system is a monumental step in responding promptly to outbreaks and emerging infectious disease that affect civilian and military populations.

Practice

Collaborations Accelerate SyS Practice

In 2019, something at CDC and across health departments clicked. Analysts, health scientists, and epidemiologists saw opportunities to join forces in unprecedented numbers. We saw an acceleration in collaborative projects across areas in which syndromic surveillance had not been used before. If you follow NSSP CoP workgroup and committee activities and read the newsletter, you see many awe-inspiring ways in which collaborations are advancing science. We want to highlight some of these collaborations that are rapidly moving us into 2020:



Three-month Outlook:

- Implement syndrome definition for **medication refill for during and after a public health disaster**.
- Develop syndrome definition for **pregnancy, delivery, and miscarriage**.
 - Collaborator: CDC's Maternal and Infant Health/Maternal and Infant Health Branch (MIHB)
 - Scheduled for early fall 2019
- Develop syndrome definition for **alcohol-involved emergency department visits**.
 - Collaborator: Opioid and Overdose Team
 - Scheduled for early fall 2019
- Develop syndrome definition for **injecting drug users (IDUs) and endocarditis** (infection of inner lining of heart chamber and valves).
 - Collaborator: CDC's National Center for Emerging and Zoonotic Infectious Diseases, Epidemiology Research and Innovations Branch
 - Scheduled for fall 2019
- Develop syndrome definition for **motor vehicle collision (e-scooters)**. NSSP is part of the Transportation Safety team, e-scooter working group.

2019–2020:

- NSSP is participating in a functional exercise to gauge how well the community shares information and data during a public health event. This exercise will evaluate response speed; technical needs and delivery options; potential local, state, and federal collaborations; and integration of emergency preparedness and management personnel.
 - Collaborator: NSSP CoP SyS Public Health Emergency Preparedness Response and Recovery (SPHERR)
- The NSSP team is working with the community and CDC's National Center for Injury Prevention and Control (the Injury Center) to **re-categorize sexual violence syndromes** into broad and narrow concepts that better use syndromic data.
- NSSP is working with CDC's National Center for Chronic Disease Prevention and Health Promotion, Division of Cancer Prevention and Control, on a special-interest project through the [Prevention Research Centers Program](#): "Improving Cancer Survivor Treatment and Outcomes by Ensuring Appropriate Emergency/Acute Care Treatment." Work will begin fall 2019 and extend through 2020. (Note: NSSP also collaborated on "Symptoms and Characteristics of Cancer Patient Visits to an Emergency Room," which was published online in the [Journal of Clinical Oncology](#) on May 26, 2019. DOI: 10.1200/JCO.2019.37.15_suppl.e18306.)

- The NSSP team is developing a syndrome definition for ketoacidosis (a life-threatening but avoidable complication of diabetes when high levels of blood acids, ketones, are produced), specifically searching the discharge diagnosis field for ICD-9/10 codes.
 - Collaborator: Division of Diabetes Translation with their Surveillance Team

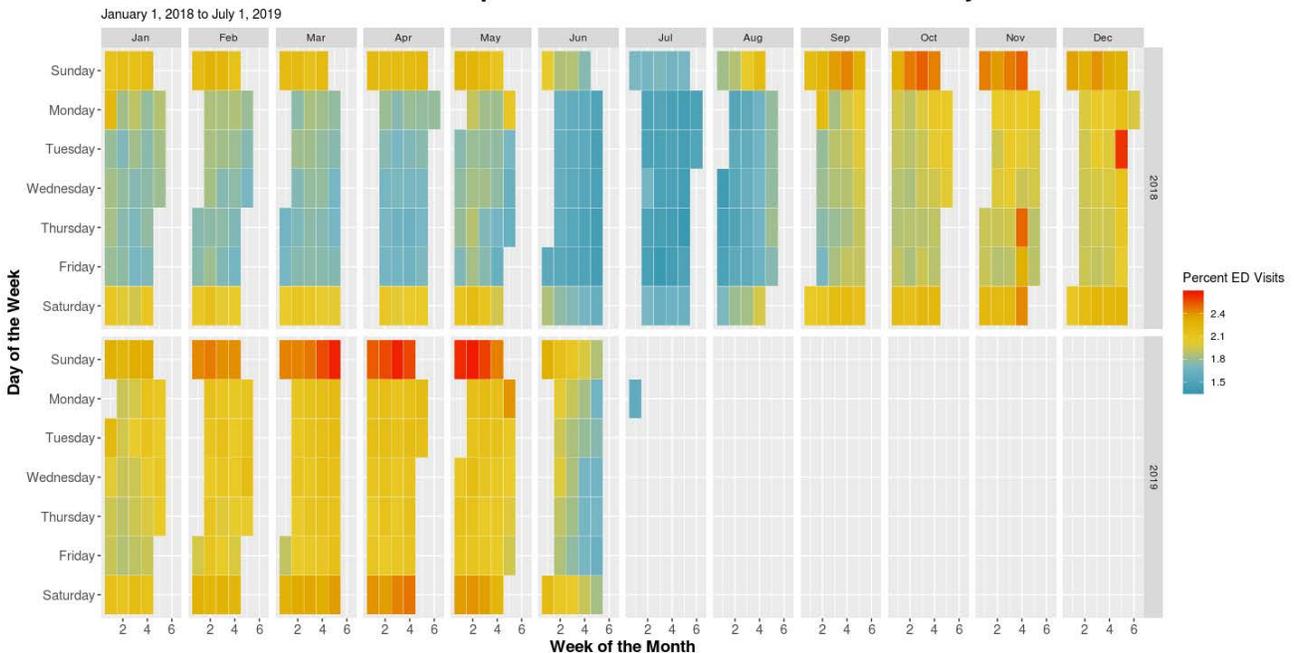
Calendar Heatmaps for Visualizing Time-series Data

A calendar heatmap can be used to visualize time-series data and provide more information than a conventional line chart time series. It can help detect patterns, anomalies, or trends by day of week, week of the month, months, and years. By design, heatmaps incorporate vast amounts of data that could be challenging for an audience to analyze and interpret. Yet it takes but a moment to fully grasp the information. For this reason, heatmaps have been useful in analyzing emergency department data to identify a syndrome's seasonal trends, patterns, and anomalies. The NSSP team is in the early stages of using heatmaps to analyze syndrome trends.

Epidemiologists value the in-depth understanding of data that visual analytics can provide.

Take a look, for example, at the calendar heatmap below that we created using R (SAS and other programs may be used, too). This heatmap summarizes asthma visits across the nation, allowing us to observe a few different trends. We notice a monthly seasonality of asthma-related visits. During the summer months, a lower percentage of visits related to asthma occur. Additionally, during the first five months of 2019, we observe a higher percentage of emergency department visits than in 2018. Perhaps this is due to the discharge diagnosis field becoming more complete over time or to new facilities being onboard. Either factor could influence the high percentage of asthma-related visits in 2019 compared with 2018. We can also determine a day-of-week trend, with the highest percentage of visits occurring on Saturdays and Sundays regardless of the month.

Calendar Heatmap of Percent of Asthma Visits Nationally



Free-text Coding in NSSP–ESSENCE

This is the fourth in a series of articles about how to write ESSENCE free-text queries.

“Part 1. Wildcards” can be found [here](#).

“Part 2. Underscores_ and Brackets []” can be found here.

“Part 3. Inclusionary Terms” can be found here.



Introduction

The search criteria for ESSENCE free-text queries are built around Boolean logical operators and regular expressions. Free-text queries are not case-sensitive and may contain “^” for wildcards; “,” for multiple entries; “ISBLANK” to look for blanks; “ISNULL” to look for nulls; [COMMA] to look for commas; and operators “and,” “or,” “andnot,” and parentheses “()” to define order and grouping. This series will cover all these topics in-depth.

Free-text queries are what makes syndromic surveillance practice, particularly practice using NSSP–ESSENCE, adaptable to different data sources and types. By using free-text queries, analysts and epidemiologists can exercise a high level of customization. They can quickly code free-text queries and rapidly respond to outbreaks, disasters, and events that unfold. Such capabilities empower users to customize queries to fit their level of data, ensuring accurate results.

Free-text coding in ESSENCE, which is accessible to all users, follows *distinct patterns*. Learning to read these patterns allows users to take queries from many places and repurpose them to suit their unique needs. Syndromic surveillance depends heavily on sharing methods, and practitioners must understand the language.

Part 4. Exclusion Terms and Parentheses

So far in this series, we have covered basic query notation, use of Carets, Underscores, and Brackets, and “OR” and “AND” statements. The final two parts of a query’s structure can involve “ANDNOT” statements and parentheses. We have demonstrated the power of inclusion terms, and the “ANDNOT” statement is the next step to leveraging the system’s query resources. We will also show how to add parentheses to specify how these “OR”, “AND”, and “ANDNOT” statements are applied and interact with each other.

“ANDNOT” statements

“ANDNOT” statements, also referred to as negations, exclusions, or exclusionary statements, are a common way to specify what you do not want your query to return. These statements are often leveraged in a syndrome definition to exclude common false positives. An “ANDNOT” statement without parentheses connects the word before it and the word after and will remove any returns where both criteria are met. To demonstrate this, we can work through the following very simple query.

THIS,OR,THAT,ANDNOT,THERE

In this query, ESSENCE will return fields containing the term “THIS” or the term “THAT” and then look through the “THAT” returns for the presence of the term “THERE” and remove these records where both criteria are met. “ANDNOT” statements do not specify the order in which the terms appear. Also note that the example’s “THERE” exclusion is only applied to “THAT” and does not apply to “THIS”. “THIS” is unaffected by the exclusion statement. Similar to “AND” and “OR” statements, ESSENCE queries are not case sensitive, neither are the operators, and all operators should be surrounded by commas.

Let's assume the following Chief Complaints (used in Parts 1–3) and a desire to create a query for fall-related injuries.

1. **Fall**
2. **Fell getting out of car**
3. **Left arm injury; Fall**
4. Falling out with friends; Suicidal
5. Feels crestfallen
6. **Patient brought in after falling on face**
7. **Fall; Left wrist injury**
8. Feels congested; Allergies

You may reasonably assume the boldfaced CCs **1, 2, 3, 6, and 7** are the *intended* records and 4, 5, and 8 are false positives.

Here's a table that shows examples of "ANDNOT" queries:

"ANDNOT" Query Examples	
Code	Description
<code>^Fall^</code>	This is a simple query of a term surrounded by carets taken from Part 1. It returns CCs 1, 3, 4, 5, 6, and 7 .
<code>^Fall^,ANDNOT,^Crestfallen^</code>	This query negates the false positive in CC 5. Returns CCs 1, 3, 4, 6, and 7 .
<code>^Fall^,OR,^Fell^,ANDNOT,^Crestfallen^</code>	This covers both forms of "Fall" in our CCs, but the negation of "Crestfallen" follows the term <code>^Fell^</code> . Since "Fell" and "Crestfallen" don't appear in the same CC, no CCs are negated. Returns CCs 1, 2, 3, 4, 5, 6, and 7 .
<code>^Fall^,ANDNOT,^Falling out^,ANDNOT,^Crestfallen^</code>	"ANDNOT" statements can be written in series. Multiple exclusionary statements in a row apply to the inclusionary term they immediately follow. Both negation terms apply to the <code>^Fall^</code> term. Returns CCs 1, 2, 3, 6, and 7 .

Parentheses

Complex syndrome definitions often use parentheses to group terms and apply statements in different ways. "ANDNOT" statements are frequently used alongside parenthetical groupings. Regarding notation in ESSENCE, all parentheses should be surrounded by commas, except when the parenthesis starts or ends the statement. To demonstrate this notation and how parentheses can redistribute statements, we can work through the following simple query.

`(,THIS,OR,THAT,),ANDNOT,(,THERE,OR,THEN,)`

In this query, since both sections are surrounded in parentheses, ESSENCE will apply both the "ANDNOT" negations "THERE" and "THEN" to both the initial inclusion terms "THIS" and "THAT". That means it will return fields containing either term "THIS" or the term "THAT" so long as there is not also the presence of either term "THERE" or "THEN". Notice the second "(" is surrounded by commas while the first one isn't since it is the first character in the query. Likewise, notice the first ")" is surrounded by commas while the last one isn't since it's the last character in the query. Misplaced commas are one of the most frequent reasons a query doesn't work as intended.

Let's assume the following Chief Complaints (used in Parts 1–3) and a desire to create a query for fall-related injuries.

1. **Fall**
2. **Fell getting out of car**

3. **Left arm injury; Fall**
4. Falling out with friends; Suicidal
5. Feels crestfallen
6. **Patient brought in after falling on face**
7. **Fall; Left wrist injury**
8. Feels congested; Allergies

You may reasonably assume the boldfaced CCs **1, 2, 3, 6, and 7** are the *intended* records and 4, 5, and 8 are false positives.

Here's a table that shows examples of queries with parentheses:

Query Examples with Parentheses	
Code	Description
<code>^Fall^</code>	This is a simple query of a term surrounded by carets taken from Part 1. It returns CCs 1, 3, 4, 5, 6, and 7 .
<code>(,^Fall^,)</code>	Sometimes parentheses won't change anything. This query functions exactly the same as the query above it. Returns CCs 1, 3, 4, 5, 6, and 7 .
<code>(,^Fall^,OR,^Fell^),ANDNOT,^Crestfallen^</code>	This covers both forms of "Fall" in our CCs, and the parentheses ensure the negation applies across both initial terms. Returns CCs 1, 2, 3, 4, 6, and 7 .
<code>^Fall^,ANDNOT,(,^Falling out^,OR,^Crestfallen^,)</code>	"ANDNOT" statements can be written and applied to a series of "OR" statements, excluding the whole statement in the parentheses. Returns CCs 1, 2, 3, 6, and 7 .
<code>(,^Fall^,OR,^Fell^),ANDNOT,(,^Crestfallen^,or,^Falling Out^,ANDNOT,(,^Out a window^,),)</code>	Syndromes can get complicated with multiple-nested parentheses. Notice this query attempts to negate the "Falling out with friends" CC while also trying to include visits related to "Falling out a window." In this instance, the "ANDNOT" term is <i>double negated</i> by a second "ANDNOT" term. Returns CCs 1, 2, 3, 6, and 7 .

Putting two sets of parentheses with different criteria linked by an "AND" statement means at least one item from each set of criteria must be met. In the example below, both coded statements will return the same visits, but the second statement is far more concise and easier to read.

```
^Fall^,AND,^Injur^,OR,^Fall^,AND,^Face^,OR,^Fell^,AND,^Injur^,OR,^Fell^,AND,^Face^
(,^Fall^,or,^Fell^,),AND,(,^Injur^,or,^Face^,)
```

Here are a couple examples to show how "ANDNOT" and parentheses can be used in practice:

Example 1:

```
(,^measl^,or,^meez^,or,^mesles^,or,^rubeo^,or, ^Measel^,or,^Measul^,or,^[;/
]b05^,),andnot,(,^titer^,or,^measles mumps
rubella^,or,^mmr^,or,^vacc^,or,^shot^,or,^immun^,or,^rubel^,or,^proph^,or,^room
b05^,or,^german^,or,^homesless^,or,^rule out measles^,)
```

This example is an excerpt from the CDC Measles v1 CCDD Category. Notice how all inclusionary terms are grouped in a parenthetical statement, all negation terms are grouped into another, and then *both statements* are linked with an "ANDNOT" statement. This makes the query concise and easy to read. Without these parentheses to group the two sets, the first two inclusion terms alone would be:

^measles^,ANDNOT,^titer^,ANDNOT,^measles mumps
 rubella^,ANDNOT,^mmr^,ANDNOT,^vacc^,ANDNOT,^shot^,ANDNOT,^immun^,ANDNOT,^rubel^,AN
 DNOT,^proph^,ANDNOT,^room b05^,ANDNOT,^german^,ANDNOT,^homeless^,ANDNOT,^rule out
 measles^,OR,^meez^,ANDNOT,^titer^,ANDNOT,^measles mumps
 rubella^,ANDNOT,^mmr^,ANDNOT,^vacc^,ANDNOT,^shot^,ANDNOT,^immun^,ANDNOT,^rubel^,AN
 DNOT,^proph^,ANDNOT,^room b05^,ANDNOT,^german^,ANDNOT,^homeless^,ANDNOT,^rule out
 measles^,

Example 2:

(,^[/]T40.1X1A^,OR,^[/]T401X1A^,OR,^[/]T40.1X4A^,OR,^[/]T401X4A^,OR,^[/]
 J965.01[:]/^,OR,^[/]96501[:]/^,OR,^[/]E850.0^,OR,^[/]
 JE8500^,or,^295174006^,or,^295175007^,or,^295176008^,),or,(,((,^narcan^,or,^naloxo^,or,^p
 oison^,or,^verdo[se][se]^,or,^over dose^,or,^overose^,or,^nodding^,or,^ nod
 ^,or,^snort^,or,^in[gj]est^,or,^intoxic^,or,^unresponsiv^,or,^loss of
 consciousness^,or,^syncop^,or,^shortness of breath^,or,^short of breath^,or,^altered mental
 status^,),and,(,^her[io][oi]n^,or,^hod ^,or,^speedball^,or,^speed
 ball^,or,^dope^,)),andnot,(,^no loss of consciousness^,or,^denie[sd] loss of
 consciousness^,or,^negative loss of consciousness^,or,^denies any loss of
 consciousness^,or,^denies her[io][oi]n^,or,^deny her[io][oi]n^,or,^denied
 her[io][oi]n^,or,^denying her[io][oi]n^,or,^denies drug^,or,^deny drug^,or,^denied
 drug^,or,^denying drug^,or,^denies any drug^,or,^with
 dra^,or,^withdra^,or,^detoxification^,or,^detos^,or,^detoz^,or,^dtox^,),)

This example is the *entire* CDC Heroin Overdose v4 CCDD Category. Notice how the green statement is linked to the yellow by an “AND” statement. Then, both statements are contained within parentheses and negated by the red statement with an “ANDNOT” operator.

Try it out!

Compare the results of the following queries in the CCDD field of ESSENCE (results should be exactly the same):

^Fall^,AND,^W19.XXXA^,OR,^Fall^,AND,^W19XXXA^

^Fall^,AND,(,^W19.XXXA^,OR,^W19XXXA^,)

Try writing a set of negation terms (expected false positives) for the following query. Check your answer with the CDC Pertussis v1 CCDD Category in Nssp ESSENCE.

(,Whooping^,OR,^Pertuss^,),ANDNOT,(_____)

We thank Senior Data Analyst Zachary Stein for volunteering to write a series of articles about free-text coding. Stein, formerly with the Kansas Department of Environment and Health, does epidemiologic work to support Nssp efforts. Stein is an active participant in the Nssp CoP. He initially wrote about free-text coding as an entry on the Nssp CoP Syndrome Definition Committee forum. The forum generated considerable interest, inspiring this series. Stein acknowledges input provided by others who contributed to the forum post.

Updated *NSSP Data Dictionary* Now Available

ESSENCE APIs, ESSENCE Daily Availability Indicator, and More!

You asked for it, and we delivered! Check out the updated *NSSP Data Dictionary*. It offers several enhancements to help you make the most of ESSENCE. Here's what's new:

ESSENCE API and Data Details Worksheet

This worksheet includes information on application programming interfaces (APIs) available through ESSENCE and gives details about data served through the APIs.

ESSENCE APIs										
Available APIs	API URL									
Table Builder	/api/TableBuilder									
Data Details	/api/dataDetails									
Time Series Data	/api/timeSeries									
Detectors	/api/detectors									
Summary Data	/api/summaryData									
Alerts	/api/alerts									
ESSENCE Data Sources										
Data Source Name	API URL Name									
Patient Location (Full Details)	va_er									
Patient Location (Limited Details by HHS Region)	va_erdreg									
Patient Location and Visit (Full Details)	va_erbv									
Facility Location (Full Details)	va_hosp									
Facility Location (Limited Details by HHS Region)	va_hospdreg									
Facility Location and Visit (Full Details)	va_hospbv									
Chief Complaint Query Validation	va_erccdd									
ESSENCE Data Details Display Name Reference		Data Source Availability								
Data Details Web Display Name	API URL Name	Data Type	va_er	va_erdreg	va_erbv	va_hosp	va_hospdreg	va_hospbv	va_erccdd	
Admission_Type	Admission_Type	varchar(50)	Y			Y				
Admit_Date_Time	Admit_Date_Time	datetime	Y			Y				
Admit_Reason_Code	Admit_Reason_Code	varchar(8000)	Y			Y				
Admit_Reason_Combo	Admit_Reason_Combo	varchar(MAX)	Y			Y				

What's included?

- Table of available ESSENCE APIs
- Table of commonly used ESSENCE data sources and API data source names:
 - Patient Location (Full Details)
 - Patient Location (Limited Details by HHS Region)
 - Patient Location and Visit (Full Details)
 - Facility Location (Full Details)
 - Facility Location (Limited Details by HHS Region)
 - Facility Location and Visit (Full Details)
 - Chief Complaint Query Validation
- Table of ESSENCE Data Details (API name references, data source availability)

ESSENCE API Query Parameters Worksheet

This worksheet lists query parameter naming conventions and data source availability.

ESSENCE Query Parameter Display Name		Data Source Availability						
Query Parameter	API URL Name	va_er	va_erdreg	va_erbv	va_hosp	va_hospdreg	va_hospbv	va_ercdd
Admit Reason Code	admitReasonCode	Y	Y	Y	Y	Y	Y	
Admit Reason Combo	admitReasonCombo	Y	Y	Y	Y	Y	Y	
Age Group	age	Y	Y	Y	Y	Y	Y	
Age Range	agerange	Y		Y	Y		Y	
C_Biosense_ID	cBiosenseID	Y			Y			
C_Death	cDeath	Y			Y			
Calculated Patient Class	calcPatientClass	Y	Y	Y	Y	Y	Y	
Calculated Patient								

What's included? The Table of ESSENCE Parameters includes ESSENCE query parameter display name, API URL, data type, and data source availability for query parameters.

ESSENCE Worksheet

The original design of the ESSENCE worksheet described data ingestion from the core NSSP Processed data to a collapsed version of the visit record into ESSENCE's Cache ER Base table. Over time, we added information about calculated fields and inferred data elements such as Disposition_Category.

Some data elements are available in NSSP Processed data but are not ingested into ESSENCE. Others are available in the "Data Details" display but are not stored in Cache ER Base. Still others are stored in Cache ER Base but are not included in "Data Details." And yes, knowing what is available and where can be confusing.

That's why we added indicators in the ESSENCE worksheet to note availability of data in Processed, Cache ER Base, and Data Details. Check out the new columns labeled "Available in Processed," "Available in ER Base or Cache ER Base," and "Available in ESSENCE Web Data Details:

Processing (ER Import Staging to ER Base)	Available in Processed	Available in ER Base or Cache ER Base	Available in ESSENCE Web Data Details
Represents Patient's Age Group in ESSENCE Web Data Details using REF_Age_to_AgeGroup_Mapping table	N	N	Y
Represents Facility Type Description in ESSENCE Web Data Details using REF_HospFacilityType table	N	N	Y
Represents Patient's Discharge Disposition in ESSENCE Web Data Details using DispositionCategoryMappingTable	N	N	Y
Represents Facility Name in ESSENCE Web Data Details using NCA_Hospitals table	N	N	Y
Represents Facility's Region in ESSENCE Web Data Details using ZipCode_to_CountyRegion_Mapping table	N	N	Y

NICC Terms Worksheet

A list of Non-Informative Chief Complaint (NICC) terms has been added to the Dictionary. If you need a refresher on NICC terms and use, see last month's newsletter. The same NICC terms that designate *informative* versus *not informative* information for chief complaint now apply to discharge diagnosis, too.

More Dictionary Worksheet Updates

- **ArchiveProcessed**
 - Updated MessageDate processing to include description of proposed processing change when MessageDate occurs before C_Visit_Date (ID #60)
 - Deleted "Concatenate repeating segments" and clarified processing of Initial_Temp to indicate that data element will be NULL if Str_Initial_Temp has concatenated values (ID #102)
- **Exceptions_Reason:**
 - Updated the description of Exceptions_Reason_Code 11 to clarify Arrived_Date_Time processing and include information about Message_Date processing
- **ESSENCE:**
 - Updated Initial_Temp processing description to include how data element can take on concatenated values; deleted "concatenate the first complete pair" to clarify that no "take first value" processing logic is applied (ID #102: Column E)
 - Updated Initial_Temp_Calc processing description to reflect new ESSENCE temperature value range mapping logic (ID #102: Column F)
 - Updated DeathIndicator so that it is populated by using the value from Patient_Death_Indicator (ArchiveProcessed) (ID #60)
 - Added new ESSENCE data element MessageDate processing to describe pre-existing error when MessageDate occurs before C_Visit_Date (ID #272)
 - Added new ESSENCE Data Elements: DDInformative (ID #266), CCInformative (ID #32), and CCAvailable (ID #95)

Data Quality on Demand Now Available through SAS Studio

Interested in making your own detailed Nssp production data quality reports for Completeness, Timeliness, and Validity? Want to control the visit date range in reports? You can do both using the **DataQuality_OnDemand.sas** (DQOD) SAS program.

DQOD is part of a suite of programs available in Nssp SAS Studio. DQOD puts more control in your hands. Launch **DataQuality_OnDemand.sas** to run one or more reports for any date range and produce Excel files with *the same content* as the detailed DQ reports Nssp releases each month. Simply copy the main program, **DataQuality_OnDemand.sas**, update a few settings, and go!

A Quick Start Guide has been developed and will be posted in the Nssp Resource Center soon. Meanwhile, please contact the service desk for help.

QUICK TIPS

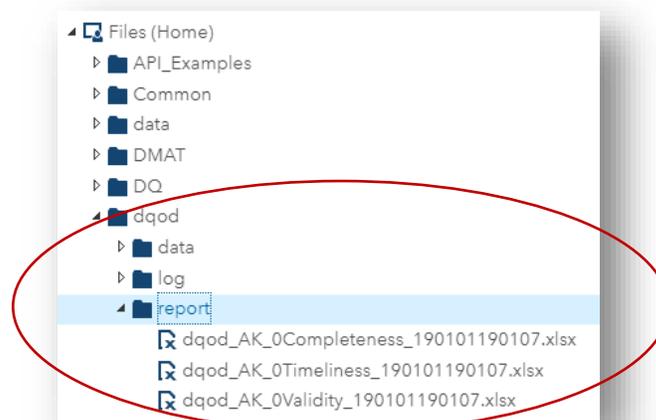
Run programs in the background so that you can continue using SAS on other projects.

How to Use DQOD

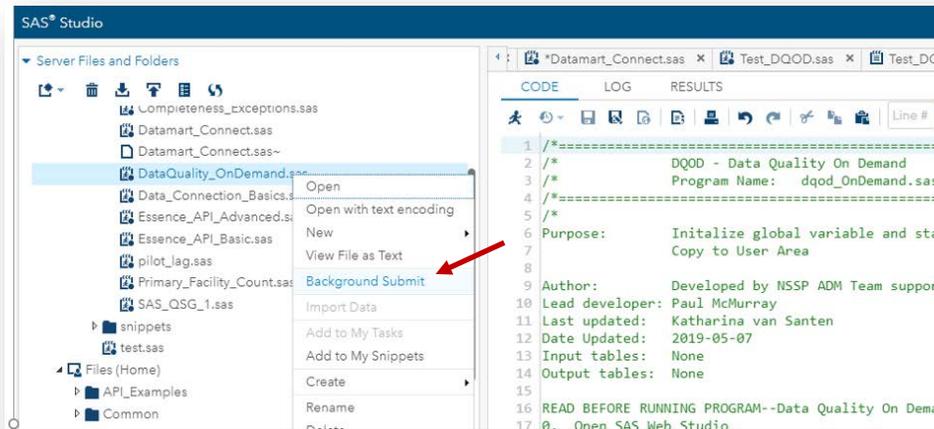
First, locate the SAS Studio tool. Under Programs, scroll to the code for **DataQuality_OnDemand.sas**. Once there, select the options you want (shown below), and then run the program:

```
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65
66
67
68
69
70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
100
101
102
103
104
105
106
107
108
109
110
111
112
113
114
115
116
117
118
119
120
121
122
123
124
125
126
127
128
129
130
131
132
133
134
135
136
137
138
139
140
141
142
143
144
145
146
147
148
149
150
151
152
153
154
155
156
157
158
159
160
161
162
163
164
165
166
167
168
169
170
171
172
173
174
175
176
177
178
179
180
181
182
183
184
185
186
187
188
189
190
191
192
193
194
195
196
197
198
199
200
201
202
203
204
205
206
207
208
209
210
211
212
213
214
215
216
217
218
219
220
221
222
223
224
225
226
227
228
229
230
231
232
233
234
235
236
237
238
239
240
241
242
243
244
245
246
247
248
249
250
251
252
253
254
255
256
257
258
259
260
261
262
263
264
265
266
267
268
269
270
271
272
273
274
275
276
277
278
279
280
281
282
283
284
285
286
287
288
289
290
291
292
293
294
295
296
297
298
299
300
301
302
303
304
305
306
307
308
309
310
311
312
313
314
315
316
317
318
319
320
321
322
323
324
325
326
327
328
329
330
331
332
333
334
335
336
337
338
339
340
341
342
343
344
345
346
347
348
349
350
351
352
353
354
355
356
357
358
359
360
361
362
363
364
365
366
367
368
369
370
371
372
373
374
375
376
377
378
379
380
381
382
383
384
385
386
387
388
389
390
391
392
393
394
395
396
397
398
399
400
401
402
403
404
405
406
407
408
409
410
411
412
413
414
415
416
417
418
419
420
421
422
423
424
425
426
427
428
429
430
431
432
433
434
435
436
437
438
439
440
441
442
443
444
445
446
447
448
449
450
451
452
453
454
455
456
457
458
459
460
461
462
463
464
465
466
467
468
469
470
471
472
473
474
475
476
477
478
479
480
481
482
483
484
485
486
487
488
489
490
491
492
493
494
495
496
497
498
499
500
501
502
503
504
505
506
507
508
509
510
511
512
513
514
515
516
517
518
519
520
521
522
523
524
525
526
527
528
529
530
531
532
533
534
535
536
537
538
539
540
541
542
543
544
545
546
547
548
549
550
551
552
553
554
555
556
557
558
559
560
561
562
563
564
565
566
567
568
569
570
571
572
573
574
575
576
577
578
579
580
581
582
583
584
585
586
587
588
589
590
591
592
593
594
595
596
597
598
599
600
601
602
603
604
605
606
607
608
609
610
611
612
613
614
615
616
617
618
619
620
621
622
623
624
625
626
627
628
629
630
631
632
633
634
635
636
637
638
639
640
641
642
643
644
645
646
647
648
649
650
651
652
653
654
655
656
657
658
659
660
661
662
663
664
665
666
667
668
669
670
671
672
673
674
675
676
677
678
679
680
681
682
683
684
685
686
687
688
689
690
691
692
693
694
695
696
697
698
699
700
701
702
703
704
705
706
707
708
709
710
711
712
713
714
715
716
717
718
719
720
721
722
723
724
725
726
727
728
729
730
731
732
733
734
735
736
737
738
739
740
741
742
743
744
745
746
747
748
749
750
751
752
753
754
755
756
757
758
759
760
761
762
763
764
765
766
767
768
769
770
771
772
773
774
775
776
777
778
779
780
781
782
783
784
785
786
787
788
789
790
791
792
793
794
795
796
797
798
799
800
801
802
803
804
805
806
807
808
809
810
811
812
813
814
815
816
817
818
819
820
821
822
823
824
825
826
827
828
829
830
831
832
833
834
835
836
837
838
839
840
841
842
843
844
845
846
847
848
849
850
851
852
853
854
855
856
857
858
859
860
861
862
863
864
865
866
867
868
869
870
871
872
873
874
875
876
877
878
879
880
881
882
883
884
885
886
887
888
889
890
891
892
893
894
895
896
897
898
899
900
901
902
903
904
905
906
907
908
909
910
911
912
913
914
915
916
917
918
919
920
921
922
923
924
925
926
927
928
929
930
931
932
933
934
935
936
937
938
939
940
941
942
943
944
945
946
947
948
949
950
951
952
953
954
955
956
957
958
959
960
961
962
963
964
965
966
967
968
969
970
971
972
973
974
975
976
977
978
979
980
981
982
983
984
985
986
987
988
989
990
991
992
993
994
995
996
997
998
999
1000
```

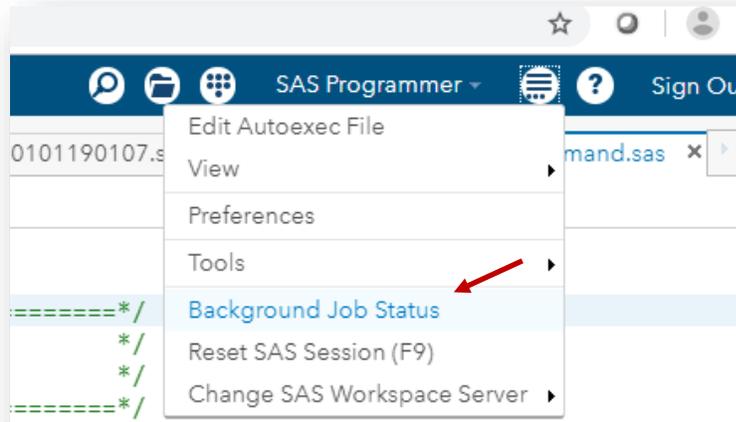
The reports will be delivered to your “dqod/report” directory:



As a reminder, you can “Background Submit” your SAS jobs by right-clicking the program and making this selection from the pop-up window:



Click the menu button on the top navigation bar to see the status of your job:



Check Your Daily Site Processing Summary!

The “Daily Summary” is an automated email sent to site administrators and their designees each morning. It provides a snapshot of processing metrics and issues and is designed to help site administrators identify potential data processing issues quickly. These emails contain collated details on the data’s journey through various processing steps.

The Daily Summary delves into data processing (e.g., filtered records, exceptions, production backlogs) and summarizes facility activity, including alerts and volume anomalies. In addition, the Monday email displays anomalies associated with visit and message volume.

A quick scan of the email will show the status of your site’s data. For in-depth guidance, NSSP is developing a Quick Start Guide that will be posted in the Resource Center. The Guide will describe each section and how data are calculated. If you have questions, suggestions for improving the Daily Summary, or concerns about data processing, please submit a Service Desk ticket to support.syndromicsurveillance.org.

QUICK TIPS

Refer to the Daily Summary often—
at least
EVERY DAY!

Technical Updates

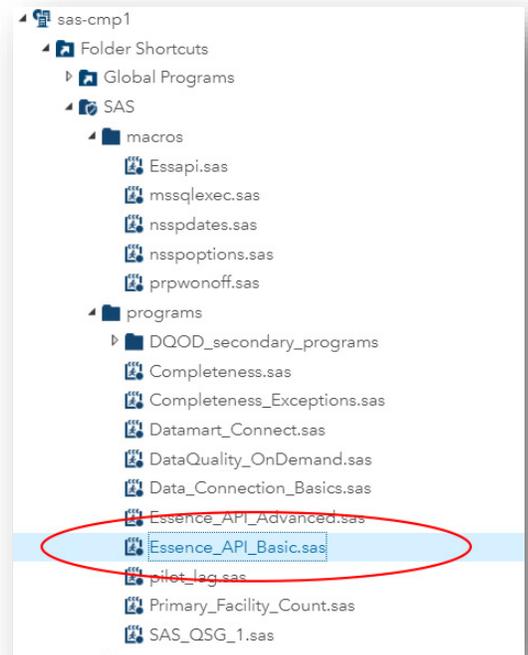
AMC Update Scheduled for Fall 2019

The NSSP team is improving the functionality of Data Access Rules, accessible via the Access & Management Center (AMC). The Data Access Rule tab will be redesigned to streamline the way in which rules are created and edited. The fall 2019 update will also include bug fixes for data sharing.

One-stop Shop for SAS Code that Supports ESSENCE APIs

NSSP has improved the SAS program for all ESSENCE application programming interface (API) options, including JSON, CSV, and PNG. The program is named ESSENCE_API_Basic.sas and can be found in the SAS\programs directory.

The program accepts all ESSENCE API output types to produce a dataset that you can use in SAS Studio. Simply paste the ESSENCE API URL into the program, provide the name of the SAS dataset to create, and provide the ESSENCE API option being called (JSON, CSV, or PNG).



Current Month and Upcoming Events

August 7	Data Validation Conference Call, 3:00–4:00 PM ET
August 20	Scheduled vendor patches in staging environment: 6:00–10:00 AM ET
August 22	Scheduled vendor patches in production environment: 6:00–10:00 AM ET
August 27	NSSP CoP Call; 3:00–4:30 PM ET; topic: PEP this...Syndromic Surveillance and Rabies PEP Administration

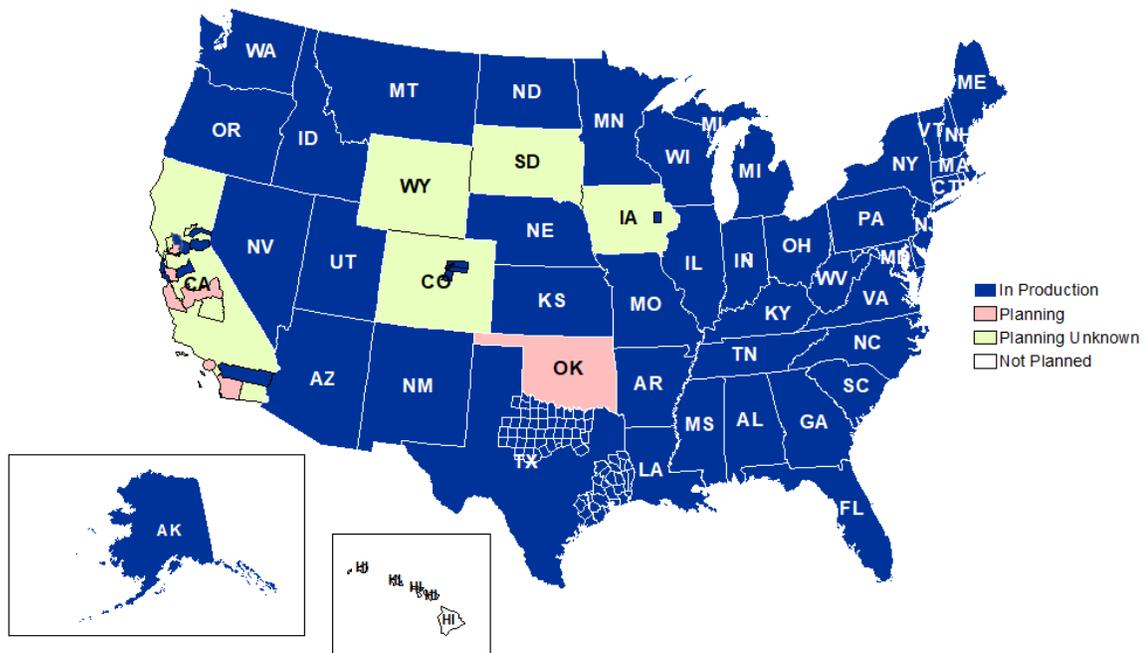
Last Month's Technical Assistance

July 3	Held Data Validation Conference Call
July 16	Applied vendor patches in staging environment
July 18	Applied vendor patches in production environment

NSSP Participation

A total of 58 sites from 46 states and the District of Columbia participate in NSSP. Currently, there are 4,478 facilities, including 3,021 emergency departments (EDs), actively contributing data to the NSSP BioSense Platform. Data from these EDs cover about 68% of all ED visits in the country.

NSSP publishes data for ED visit coverage each quarter. These data and the coverage map shown below were updated July 2019. The calculation method is described in the [December 2018 issue](#) of *NSSP Update*.



Definitions: NSSP consolidates facilities that provide data under a single data administrative authority called a **site administrator**. These facilities and single-site administrator constitute a **site**.